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Crown Classification

Crown class is a term used to describe the position of an individual tree in the forest canopy. In the definitions below, “general layer of the canopy” refers to the bulk of the tree crowns in the size class or cohort being examined. Crown classes are most easily determined in even aged stands, . In an uneven aged stand, a tree’s crown would be compared to other trees in the same layer. Kraft’s Crown Classes are defined as follows (Smith et al. 1997 and Helms 1998 modified for clarity):

Dominant trees :

These crowns extend above the general level of the canopy. They receive full light from above and some light from the sides. Generally, they have the largest, fullest crowns in the stand . Because the crown are large, tree growth is good .The characteristics include.

- Crown extends above the general canopy layer for the stand.
- Crown intercepts direct sunlight across the top and along side of the upper branches.
- Crown well-developed and large, though usually somewhat crowded along lower branches.
- Tree diameter usually among the largest in the stand.

Co-dominant trees :

These crowns make up the general level of the canopy. They receive direct light from above, but little or no light from the sides. Generally they are shorter than the dominant trees. Tree growth is generally moderate to good. The characteristics include.

- Crown within and helping to form the main crown canopy for the stand.
- Crown intercepts direct sunlight across the top, but only at tips of the upper side branches.
- Crown well-develop , but of only medium size and crowded at the sides.
- Tree diameter among the upper range of those present , but not the largest.

Intermediate trees :

These crowns occupy a subordinate position in the canopy. They receive some direct light from above, but no direct light from the sides. Crowns are generally narrow and/or one-sided, and shorter than the dominant and co-dominant trees. The tree's crown is small and tree growth is poor. The characteristics included.

- Crown extends somewhat into the lower part of the main canopy.
- Crown intercepts direct sunlight only at a limited area on the top and none at side
- Crown narrow and short , with limited leaf surface area and a low live crown ratio.
- Tree diameter within the lower range of those present ,but not necessarily the smallest.

Suppressed trees (Overtopped trees) :

These crowns are below the general level of the canopy. They receive no direct light. Crowns are generally short, sparse, and narrow. The crown is very small and tree growth extremely poor. The characteristics include.

- Crown entirely below the main canopy and covered by branches of taller trees.
- No direct sunlight strikes at any portion of the crown .
- Crown small, often lopsided, flat-topped and sparse.
- Tree diameter among the smallest in the stand.

Wolf :

These tree develop and grow in the open portions of the stand. They have full crowns on all sides, with branches well below the canopy level. The crowns are uncrowned on two or more sides and receive full light from above and well down on two or more sides. Because of the large crown , tree growth is excellent , but because of the large branches tree quantity (for lumber) is poor . Wolf tree may make excellent wildlife trees.

Mortality:

These are dead trees within the stand. Suppressed trees usually die from competition from larger trees. However, trees from any crown class may die from disease or insect attack.

Crown classes are a function of tree vigor, tree growing space, and access to sunlight. These in turn are influenced by stand density and species shade tolerance. A “suppressed” Douglas-fir tree is likely of low vigor and will probably die out. It typically would not be able to respond to an increase in sunlight if a neighboring tree fell over. A shade tolerant “suppressed” western hemlock on the other hand, may survive very nicely and be able to take advantage of increased sunlight if a neighboring tree were to fall over.

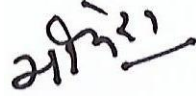
Crown class distribution can also infer overall vigor of an even aged stand. If most trees are in the intermediate crown class, then the stand is likely too crowded and the trees are stagnated. A stand with nearly every tree in the dominant category is either very young, with all of the trees receiving plenty of sun, or very sparse and may be considered “understocked.” A typical even aged stand has the majority of trees in the co-dominant class, and the fewest trees in the suppressed class. The relative ratios of dominant and intermediate classes are generally a function of species composition.

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